FORWARD ENGINEERING
& ASSOCIATES INC.
Geotechnical, Environmental, Inspection & Material Testing Services
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REPORT

GEOTECHNICAL INVESTIGATION

PROPOSED MULTI-STOREY RESIDENTIAL DEVELOPMENT
1493 SIXTH LINE
OAKVILLE, ONTARIO

PREPARED FOR:

PENALTA GROUP LTD.
504 Iroquois Shore Road, Unit 12B
Oakville, Ontario
L6H 3K4

June 05, 2025
Ref. No. G7481

Distribution: 1 PDF Copy – PENALTA GROUP LTD.
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INTRODUCTION

This report presents the results of the geotechnical investigation carried out by Forward Engineering & Associates Inc. for the proposed residential development at 1493 Sixth Line in Oakville, Ontario.

The location of the proposed development in relation to the property boundaries, and adjacent roadways is shown on Drawing No. 1, which also depicts the proposed Site Plan as well. The locations of the boreholes carried out during this investigation are also presented on Drawing No. 1.

This investigation was authorized by Mr. Alen Ghaderi of Penalta Group Ltd.

PURPOSE AND SCOPE

The objectives (purpose) of this investigation were to determine the following:

- The extent, depth and properties of the predominant fill/soil strata as they affect the design and construction of the proposed development.
- The short-term groundwater levels, if encountered.
- The appropriate geotechnical design criteria for building foundations, excavations, backfill, slab construction, utilities and pavement.

To achieve the above noted objectives, the field program consisted of twelve [12] boreholes extended to a depth ranged from 1.65 to 4.67 m below the Existing Ground Surface Level (EGSL).

On completion of the field and laboratory work, an engineering analysis was carried out, and this summary report was prepared.

PROPOSED DEVELOPMENT

We understand, based on the reviewed Site Plan, that the proposed new development will consist of the following:

- Demolition of the existing detached wood-framed dwelling, with a basement and an attached garage, at 1493 Sixth Line property site in Oakville, ON.

- Construction of [five] 5-storey housing development, with a single level of basement.
- In addition, the first floor and remaining spaces will be utilized for amenity space, daycare, parking spaces, as well as landscaped and natural areas.

FIELD AND LABORATORY TESTING

Field Works

Borehole Investigation:

The field work for the borehole investigation consisted of twelve [12] boreholes (BH-1 to BH-12), drilled on March 27 and 28, 2025, under the supervision of a member of our staff.

The drilled boreholes were located at the approximate locations shown on Drawing No. 1 and extended to a depth ranging from about 1.60 to 4.67 m below the EGSL.

Soils were sampled in the boreholes following the Standard Penetration Test (SPT) method using a D-50 Track Mounted Auger Drill Rig using Rotary Drilling with Split Spoon Samplers.

The samples were logged in the field and appropriately stored in plastic bags and re-examined in more detail in the laboratory. The samples will be stored for a period of three months and then discarded, unless we are instructed differently.

Groundwater observations were made in the open boreholes, during and upon completion of the drilling operation. The results are recorded on the Log of Borehole sheets attached in Appendix A.

Elevations referred to in this report are metric and geodetic. The ground level elevations at the borehole locations were interpolated from the *Sketch Illustrating Topographic Information* drawing dated May 12, 2025, by David B. Searles Surveying Ltd., and provided to us by the client.

Laboratory Testing

Laboratory testing consisted of determination of the in-situ moisture content of the retrieved and representative soil samples.

SITE CONDITIONS

Surface Conditions

The site is located at 1493 Sixth Line, Oakville, Ontario.

For this description it will be assumed that the north bearing is parallel to the nearest road which is Sixth Line. At the time of this investigation the dwelling on site was vacant.

The site condition, as observed during our site visit April 27, 2025, is presented in the following *Table No. 1*.

Table 1 - Site Surface Observations

East Boundaries:	Oakville Park.
North Boundaries:	Institutional building (Munn's Public School).
West Boundaries:	Sixth Line.
South Boundaries:	Oakville Park.
Surface Coverage:	The site predominantly consists of landscaping. A small portion consists of a gravel driveway and house footprint. The landscaping at the rear contains mature trees.
Ground Level:	The topography of the site is generally flat. *It should be noted that the east side of the property (rear of existing house), which previously contained significant number of mature trees, recently had trees removed resulting in uneven ground.*
Ditches:	None observed.
Berms/Stockpiles:	None observed.
Existing Structures:	Vacant residential dwelling with single level basement.
Proposed/Intended Land Use:	Residential.

Subsurface Conditions

Borehole Investigation Findings:

The subsurface conditions encountered at the borehole locations are shown on the

Log of Borehole sheets, presented in Appendix A, and can be summarized as follows:

Topsoil/Organic Soil	A layer of topsoil/organic soil was encountered at the surface of all the boreholes, except BH-6 and BH-9, with a thickness ranging from about 150 to 350 mm. *The east side of the property (rear of existing house), which had a significant number of mature trees removed, had uneven ground with varying organic soil thicknesses. It should be noted that the measurements of this layer are not considered accurate to be used for estimate purposes.*
Fill/Disturbed Soil	A layer of Fill/Disturbed soil was found at the surface or below the topsoil layer in all the boreholes and extended to a depth ranging from about 0.76 to 1.52 m below the EGSL. This stratum generally consisted of reddish-brown clayey silt/silty clay with minor traces of rootlets and occasional organics and gravel in the upper zone. This stratum was observed in mostly very moist to wet state and in very loose to loose state of packing. *For more accurate description of this layer, and for a more accurate depth, test pits are required.*
Shale Till	Shale Till was encountered below the fill/disturbed soil in all the boreholes, except BH-6, BH-8, BH-9 and BH-12, and extended to a depth ranging from about 1.52 to 3.05 m below the EGSL. Occasionally in some of the boreholes this till encountered shale fragments. This red till was observed in moist state and found in hard consistency.
Highly Weathered Shale	Hard, red, and moist Highly Weathered Shale was below the fill/disturbed soil or shale till layers, and it extended to the maximum explored depth

Groundwater	Groundwater level observations were made during and immediately upon the completion of the drilling investigation. The results are summarized in the following *Table 2*, as shown:

Table 2a: Groundwater &Cave-in Observations Upon Completion of Drilling

Borehole No.	Borehole Depth (m)	Cave-in Depth Below EGSL (m)	Groundwater Depth Below EGSL (m)
BH-1	3.10	Open	Dry
BH-2	2.34	Open	Dry
BH-3	2.41	Open	Dry
BH-4	2.36	Open	Dry
BH-5	4.67	4.3	Dry
BH-6	1.60	Open	Dry
BH-7	1.65	Open	Dry
BH-8	1.91	Open	Dry
BH-9	1.65	Open	Dry
BH-10	1.98	Open	Dry
BH-11	1.65	Open	Dry
BH-12	1.65	Open	Dry

It should be noted, however, that the groundwater levels are subject to seasonal fluctuations. Consequently, definitive information on the long-term groundwater levels could not be obtained at the present time.

GEOTECHNICAL DISCUSSION AND RECOMMENDATIONS

Foundations

We understand that the proposed multi-storey building will consist of [five] 5-storey housing units and commercial building levels with a single basement/underground level. The ground Finished Floor Elevation (FFE), basement/underground) finished floor level, and structural loads are not known at this stage.

Conventional Spread/Strip Footings

The proposed building(s) can be supported on the conventional strip/spread footings established mainly within the native undisturbed, hard weathered shale [bedrock] at/or below the founding depths/elevations presented in Table 3, shown below.

The size of the footings can be proportioned to the following bearing resistances**:**

Factored Bearing Resistance at Ultimate Limit State (ULS) = 1050 kPa

Bearing Resistance at Serviceability Limit State (SLS) = 750 kPa

Table 3 –Founding Depth/Elevation of Strip/Spread Footings

Borehole No.	*Borehole Ground Surface Elevation (m)*	*Founding Depth Below EGSL at/or below*	*Founding Elevation (at/or below)*
1	136.55	2.30 m	134.25 m
2	136.75	1.50 m	135.25 m
3	136.65	1.50 m	135.15 m
4	136.5	1.50 m	135.00 m
5	136.47	3.05 m	133.42 m
6	137.25	1.50 m	135.75 m
7	136.65	1.50 m	135.15 m
8	136.29	1.50 m	134.79 m

Foundations Notes

When exposed to weathering and atmospheric actions, the otherwise freshly excavated intact and sound shale surfaces will suffer from degradation/deterioration and time-dependent loss of strength/stiffness. Therefore, it is imperative to place the concrete for readily excavated footings without delay or applying a high compressive strength concrete levelling layer/mud mat, at least 75 mm thick, to be poured on approved bearing surface of the sound bedrock prior to actual footing construction. In summary exposure of the shale bedrock should be kept to a minimum.

Adjacent footings founded at different elevations should be stepped at 10 horizontal to 7 vertical. For frost protection requirements, all exterior footings and footings unheated areas, must have a minimum soil cover of 1.2 m.

Maximum total settlements of conventional strip/spread footings designed and constructed in accordance with the above recommendations should be less than the total tolerable limit of 25 mm. The differential settlements are expected to be less than 19 mm.

Furthermore, the recommended bearing capacity and foundation depths have been calculated from the limited borehole information and are intended for design purposes only.

More specific information, with respect to founding conditions between the boreholes will become available when the proposed construction is underway. Therefore, the encountered founding conditions must be verified in the field, and all footings must be inspected by this office, before placement of concrete.

Earthquake Considerations

For structural design seismic consideration, the seismic provisions of the Ontario Building Code (**OBC** 2024) outline the Classification of sites for Seismic Site Response in Table 4.1.8.4.-B of the National Building Code of Canada (**NBC**) 2020.

According to Table 4.1.8.4.-B of the code, and this investigation findings, the subject Seismic Site Class is selected as Class “C”.

Basement and Underground Walls

Basement and underground/retaining walls should be designed to resist a pressure "p", at any depth, "h" below the surface, as given by the expression **:**

$$p = 0.45 [\gamma h + q]$$

where; 0.45 is the earth pressure coefficient considered applicable

$\gamma = 21.0$ kN/m^3 is the unit weight of granular backfill

q = an allowance for surcharge.

The foregoing equation assumes that perimeter drains will be provided and that the backfill against the subsurface walls would be a free draining granular material.

Excavation and Backfill

No major problems should be encountered for the anticipated depth of excavation. The excavation should be back sloped at 45 degrees or flatter in accordance with the current Ontario Occupational Health and Safety Act.

The excavation in the till and weathered shale can be carried out with a heavy duty back-hoe. Some of the relatively harder limestone slabs or seams, interbedded in the weathered shale (shale till), may require the use of jack hammer or hoe ram.

The anticipated water seepage, if any, into the excavations from the more permeable seams/lenses or surface run-off can be handled by conventional pumping methods.

The material to be used for backfilling under floor slab or in-service trenches should be suitable for compaction, i.e., free of organics and with natural moisture content, which is within 2 percent of its optimum moisture content, and no pieces larger than 100 mm in size. The backfill material should be compacted to at least 98 percent of the SPMDD. However, the excavated materials will be very sensitive to moisture content, and the use of Granular B/C is preferred.

The backfill against the subsurface walls, and confined spaces, should be free draining granular fill, preferably conforming to the Ontario Provincial Standard Specification for granular base course, Granular B.

Slab Construction and Permanent Drainage

The floor slabs can be supported and constructed following the standard slab-on-grade technique, provided that any vegetation, organic soil and/or fill with organics must be removed and the base should be thoroughly proof-rolled. Any soft spots revealed during proof-rolling should be sub-excavated and backfilled with suitable materials, compacted to at least 98 % SPMDD.

The ground surface should be adequately and thoroughly compacted to densify the near surface disturbed and loose soils. If needed, raising the grades thereafter should be achieved using suitable fill free of organics and any other deleterious materials or Granular B material, and to be placed in shallow lifts i.e., ±200 mm thick and thoroughly compacted to 98 % SPMDD i.e. "engineered fill"

The floor slabs should rest on a well compacted layer of "19 mm clear stone" at least 200 mm thick when compacted. The stone bed would act as a barrier and prevent capillary rise of moisture from the subgrade to the floor slab.

Permanent perimeter and sub-floor drainage system, as shown in Drawing No. 2, shall be provided. The sub-floor system may be eliminated based on observations during construction.

Underground Utilities

The problem areas of pavement settlement largely occur adjacent to manholes, catch basins and service crossings. The on-site materials would generally be difficult to compact in these areas, and it is therefore recommended that a sand backfill be used in confined areas.

The upper 1.0 m of the trench backfill should be compacted to 98 % SPMDD. Below this zone, a 95 % SPMDD compaction is considered acceptable.

Pavement Design

In the proposed pavement areas any vegetation, topsoil/organic soil and/or fill with noticeable amount of organics should be removed, and the base should be thoroughly proof-rolled. Any soft spots revealed during proof-rolling should be sub-excavated and backfilled with suitable materials, compacted to at least 98 % SPMDD.

The subgrade soil is frost susceptible. The design of pavement is therefore mainly influenced by the need to minimize the effects of freezing and thawing. Consequently, the ground must not be unnecessarily disturbed.

The subgrade should be sloped to facilitate drainage towards catch basins and the final subgrade should be compacted before pavement is constructed.

It should be noted that the subgrade should be dry and firm, not spongy, during compaction and during the construction of the [sub] base. Soft or spongy subgrade areas should also be sub-excavated and properly replaced with suitable approved backfill compacted to 98 % SPMDD.

The subgrade will suffer strength regression if water is allowed to infiltrate into the mantle. Therefore, sub-drains should be installed along the edge of all pavement areas to prevent surface water from infiltrating into the subgrade.

Based on the engineering properties of the subgrade soil, climatic conditions and the anticipated use of the pavement, typical flexible asphaltic pavement designs for this development are as shown in the following Table:

Table 3 - Typical Flexible Asphaltic Pavement Design

Pavement Components	Heavy Duty	Medium Duty
Asphaltic Concrete	40 mm HL3	40 mm HL3
	60 mm HL8	40 mm HL8
19 mm Crushed Limestone	150 mm	150 mm
Granular B Sub-base	300 mm	200 mm

All granular materials used in the construction of pavement should be compacted to 98 % of Standard Proctor maximum dry density.

If the proposed pavements are to be constructed during wet seasons, the moisture content in the subgrade will probably be above the optimum, and this will render its shear strength inadequate to support paving equipment traffic. In this case, the granular sub/base should consist of 50 mm Crusher-Run Limestone.

It should be noted that all pavement materials should meet their relevant OPSS, Halton Region, and Town of Oakville Standard Specification requirements for placement and quality.

General Comments

This geotechnical report is provided based on the terms of reference provided above and, on the assumption, that the design will be in accordance with the applicable codes and standards.

If there is any change in the design features relevant to the geotechnical analyses, or if any questions arise regarding the geotechnical aspects of the codes and standards, this office should be contacted to review the design.

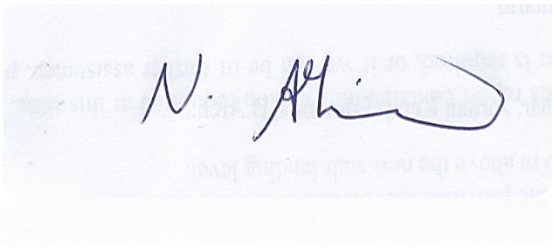
The comments given in this report are intended only for the guidance of design engineers.

Contractors bidding on or undertaking the works should, in this light, decide on their own investigations, as well as their own interpretations of the factual borehole results. This concern specifically applies to the classification of the fill/organic/topsoil cover and the potential reuse of these soils on/off site.

The prospective contractors must draw their own conclusions as to how the near surface and subsurface conditions may affect them.

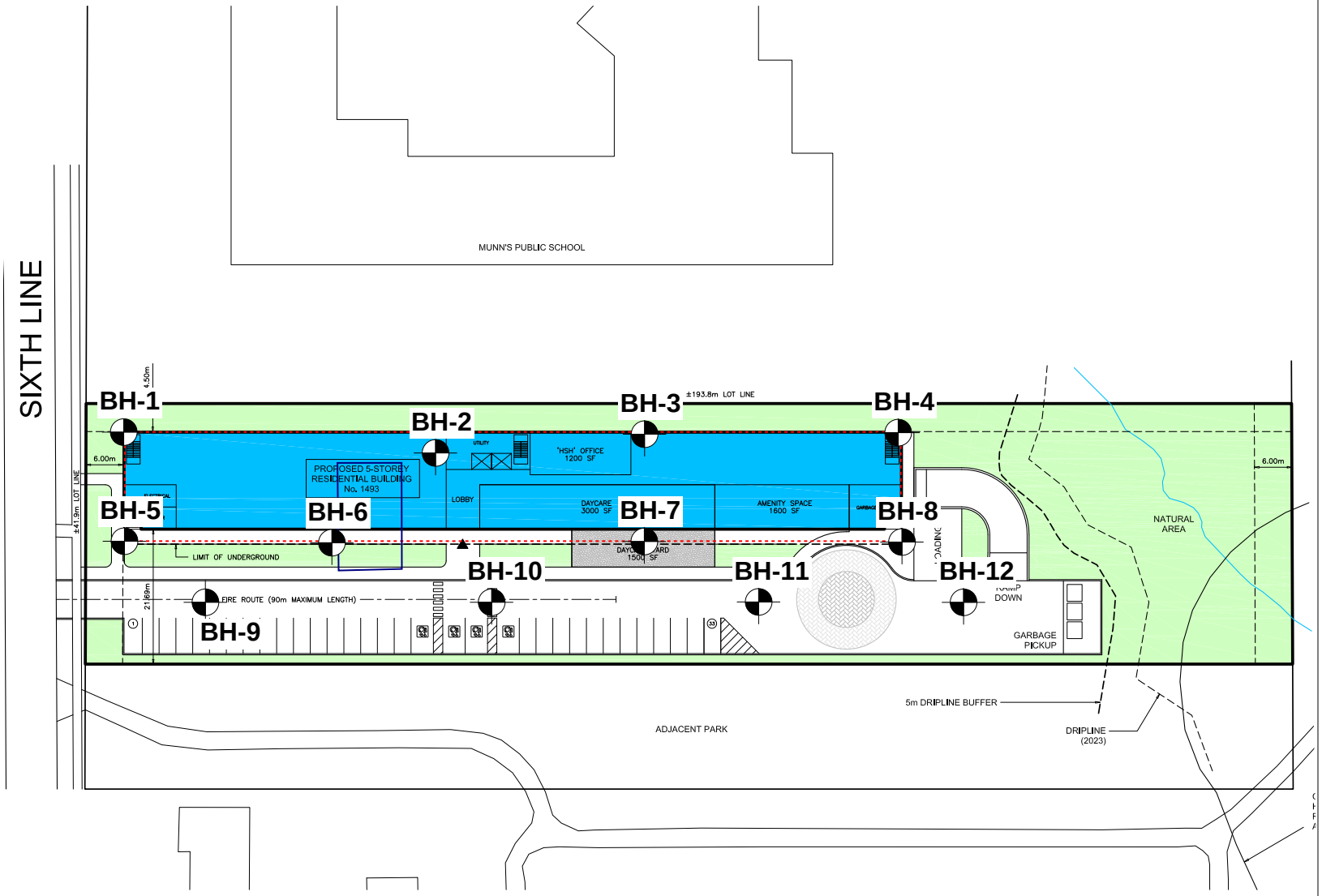
We trust this report contains information requested at this time. However, if any clarification is required, or if we can be of further assistance, please contact this office.

Yours truly,
Forward Engineering & Associates Inc.



Nasser Abdelghani, M.Sc., P.Eng.
Project Geotechnical Engineer

G. S. Semaan, M.Eng., P.Eng.
Principal



NOTES:

BH = BOREHOLE LOCATION

DRAWING No. 1
BOREHOLE LOCATION PLAN

Rev.	DATE	REVISION / ISSUE
04		
03		
02		
01		

Project Name: PROPOSED RESIDENTIAL DEVELOPMENT

Address: 1493 SIXTH LINE, OAKVILLE, ONTARIO

PROJECT No.	:7481
DRAWING DATE	:APR. 14, 2025
DRAWN BY: P.R.	PAGE 1 of 1
CHECKED BY: G.S.	

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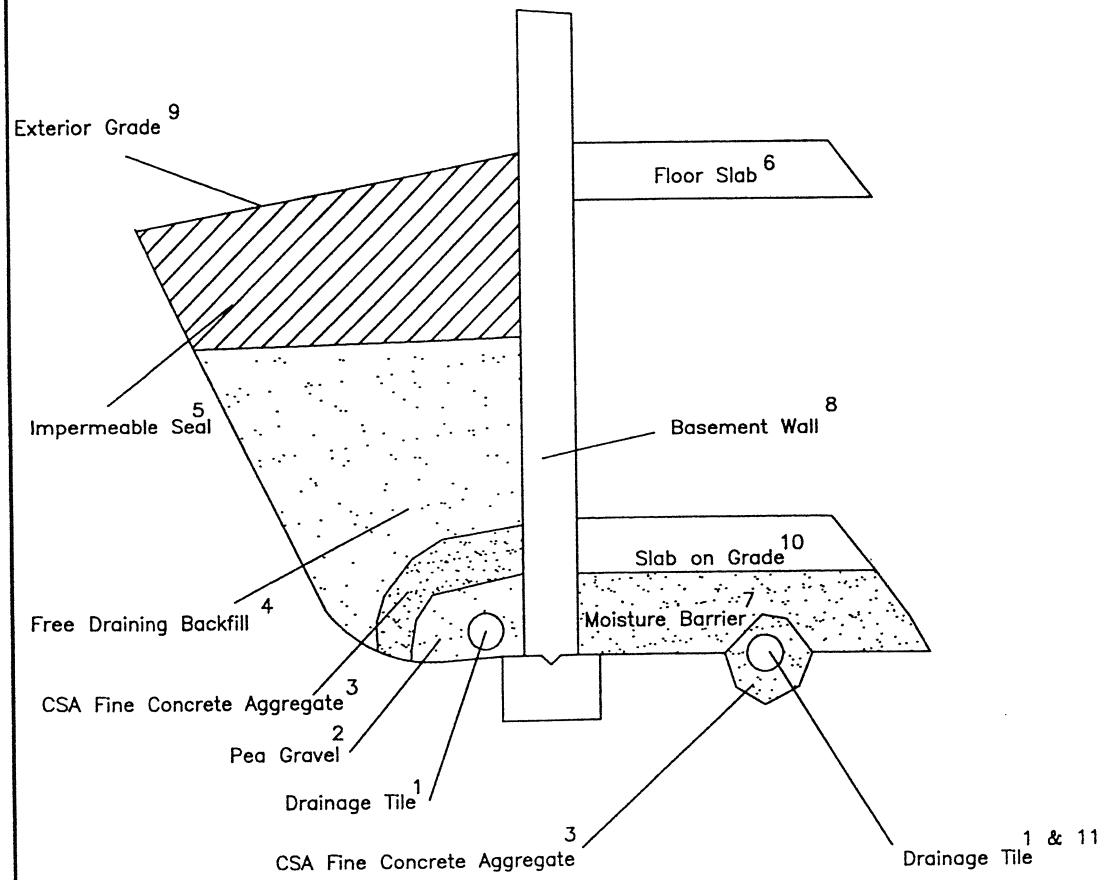
DRAINAGE AND BACKFILL RECOMMENDATIONS

(Not to Scale)



TYPICAL SECTION

NOTES:

1. Drainage tile to consist of 100 (4") diam. Weeping tile or equivalent perforated pipe leading to a positive sump or outlet. Invert to be minimum 150mm (6") below underside of floor slab.
2. Pea gravel 150mm (6") top and sides of drain. If drain is not on footing, 100 mm (4") of pea gravel below drain. Clear 20mm (3/4") crushed stone may be used provided it is covered by an approved porous membrane (Terrafix 270R or equivalent).
3. C.S.A. Fine aggregate to act as filter material. Minimum 300 mm (12") top and sides of tile drain. This may be replaced by an approved porous plastic membrane as indicated in 2.
4. Free draining backfill - Class B pit-run gravel or equivalent compacted to 93 – 95 % Standard Proctor Maximum Dry Density (SPMDD).
5. Impermeable backfill seal compacted clay, clay silt or equivalent. If original soil is free draining seal may be omitted.
6. Do not backfill until wall is supported by basement and floor slab or adequate bracing.
7. Moisture barrier to consist of 20mm (3/4") compacted crushed stone. Layer to be 200mm (8") thick.
8. Basement walls to be damp proofed.
9. Exterior grade to slope away from wall.
10. Slab on grade should not be structurally connected to wall or footing.
11. Underfloor drain invert to be at least 300 (1') below underside of floor slab. Tiles to be placed in parallel rows 6-8m (20' – 25') centres one way.
12. do not connect the underfloor drains to perimeter drains.
13. If the 20mm (3/4") stone requires surface blinding, use 6mm (1/4") stone chips.

DRAWING NO. 2

APPENDIX A

BOREHOLE LOG SHEETS
(1 – 12)

Project No: 7481

Log of Borehole BH-1

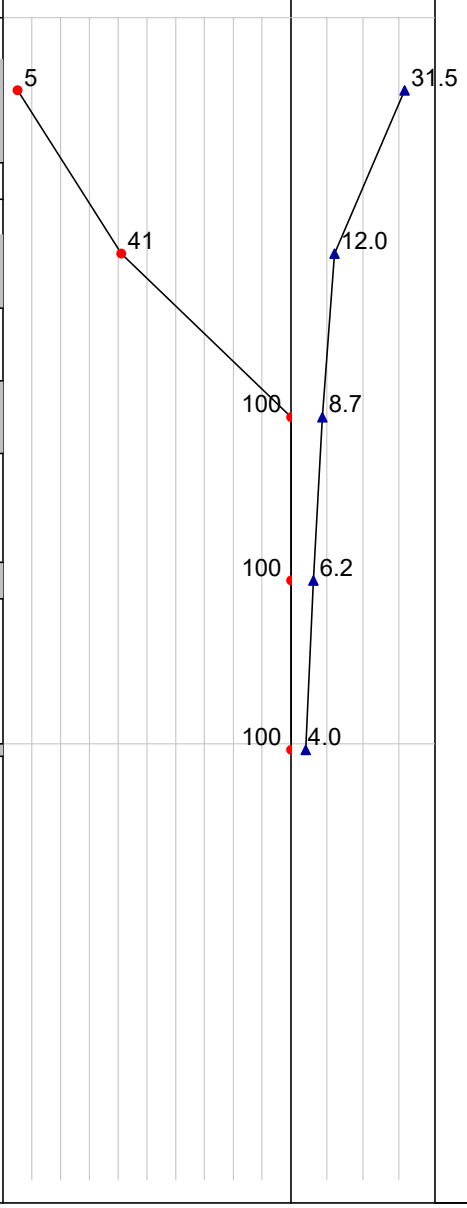
Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 2

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO

Depth (m)	Description of strata	Elevation (m)	Sample No.	Type	Blows/ft	Recovery
0	Ground Surface	136.55				
	TOPSOIL/ORGANIC SOIL (±300 mm)	0.00	1	SS	5	
	FILL/DISTURBED SOIL reddish brown clayey silt and silty clay, loose, very moist to wet.	136.25 0.30				
		135.79 0.76	2	SS	41	
1	SHALE TILL with occasional shale fragments. hard, red, moist.		3	SS	100	
2		134.26 2.29	4	SS	100	
	HIGHLY WEATHERED SHALE hard, red, damp to moist.					
3		133.45 3.10	5		100	
	End of Borehole					
4						



Monitoring Well

Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 27 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1

Project No: 7481

Log of Borehole BH-2

Project: PROPOSED RESIDENTIAL DEVELOPMENT

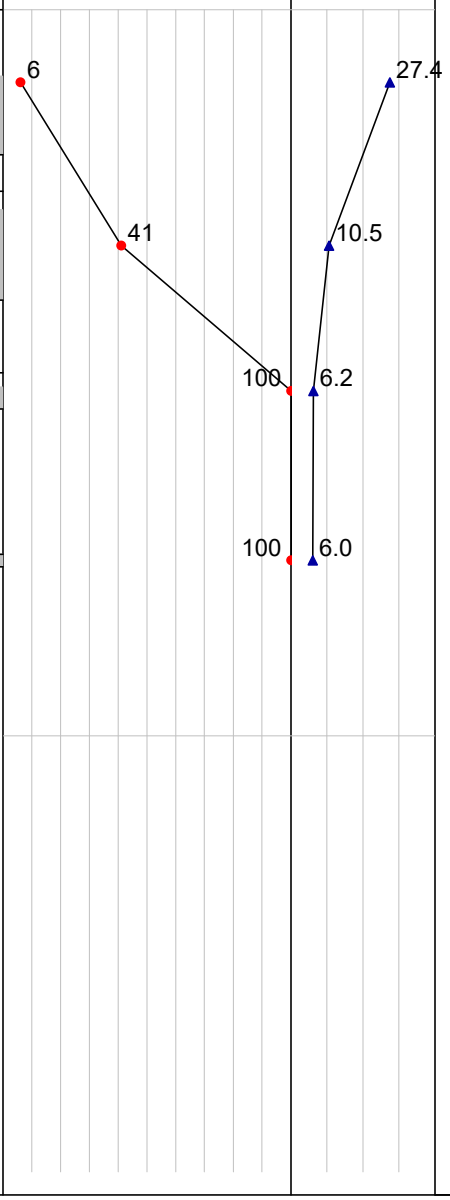
Client: PENALTA GROUP LTD.

Enclosure: 3

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO

Depth (m)	Description of strata	Elevation (m)	Sample No.	Type	Blows/ft	Recovery
0	Ground Surface	136.75				
	TOPSOIL/ORGANIC SOIL (±230 mm)	0.00				
	FILL/DISTURBED SOIL reddish brown clayey silt with traces of rootlets, loose, very moist to wet.	136.52 0.23	1	SS	6	
		135.99 0.76				
1	SHALE TILL hard, red, moist.		2	SS	41	
		135.22 1.52	3	SS	100	
2	HIGHLY WEATHERED SHALE hard, red, moist.					
		134.41 2.34	4		100	
3	End of Borehole					
4						

Blows/ft: 20 40 60 80 — Water Content %: 10 20 30 — Monitoring Well



Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 27 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1

Project No: 7481

Log of Borehole BH-3

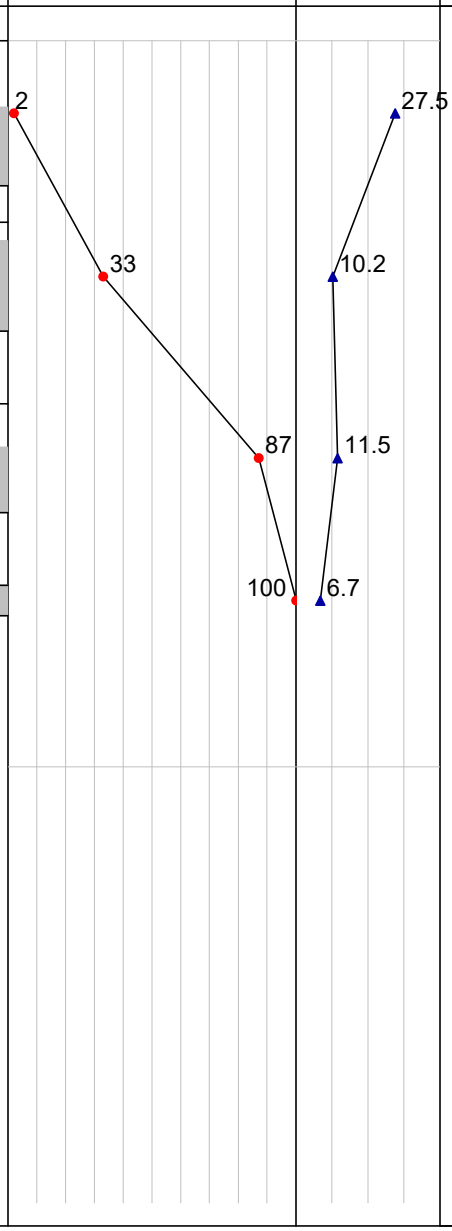
Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 4

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO

Depth (m)	Description of strata	Elevation (m)	Sample No.	Type	Blows/ft	Recovery
0	Ground Surface	136.65				
	TOPSOIL/ORGANIC SOIL (±150 mm)	0.00	1	SS	2	
	FILL/DISTURBED SOIL reddish brown clayey silt with traces of rootlets, very loose, very moist to wet.	135.89				
1	SHALE TILL hard, red, moist.	0.76	2	SS	33	
	HIGHLY WEATHERED SHALE hard, red, moist.	135.13	3	SS	87	
2		1.52	4	SS	100	
	End of Borehole	134.24				
3		2.41				
4						



Monitoring Well

Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 28 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1

Project No: 7481

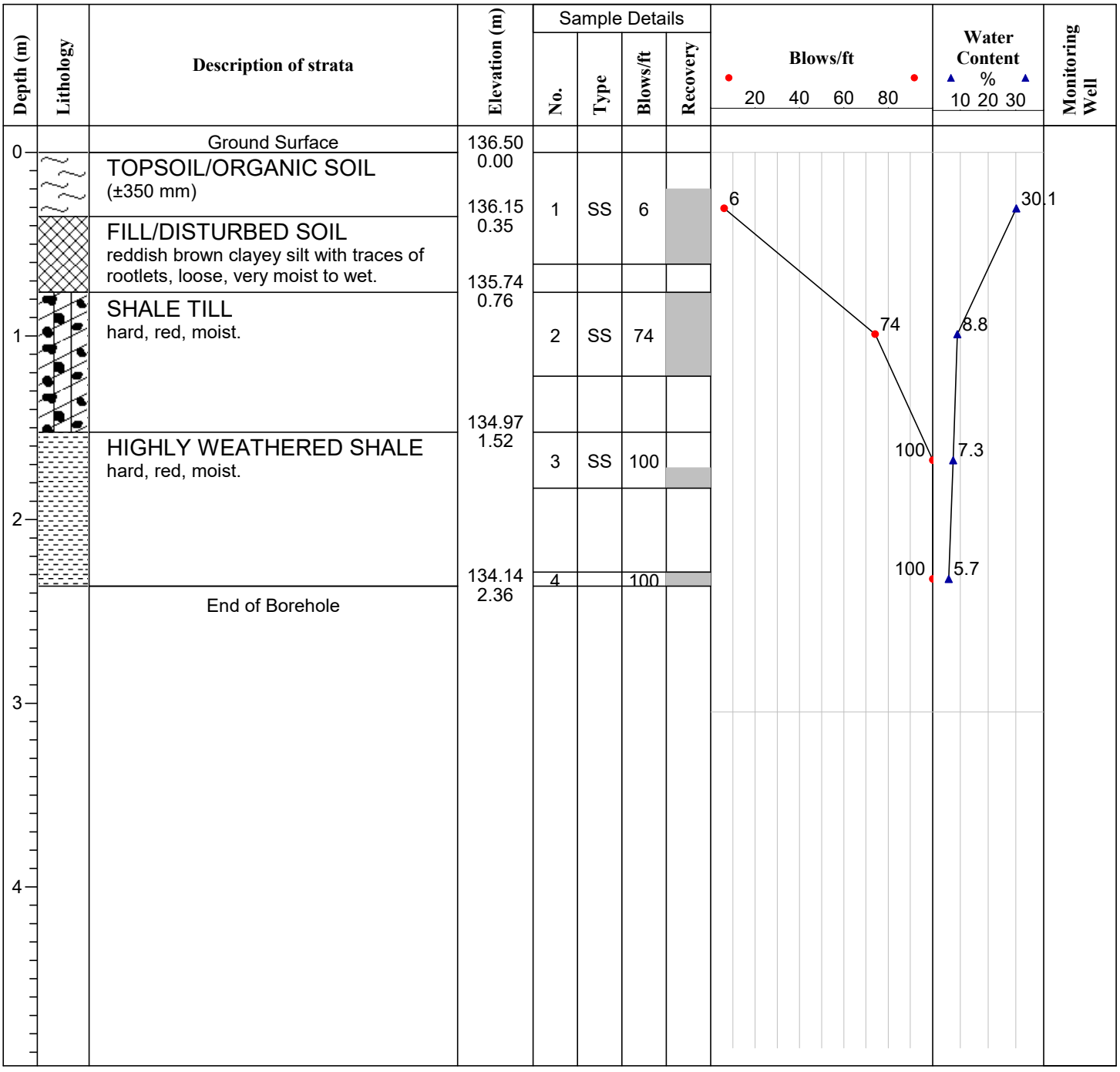
Log of Borehole BH-4

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 5

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO



Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 28 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1

Project No: 7481

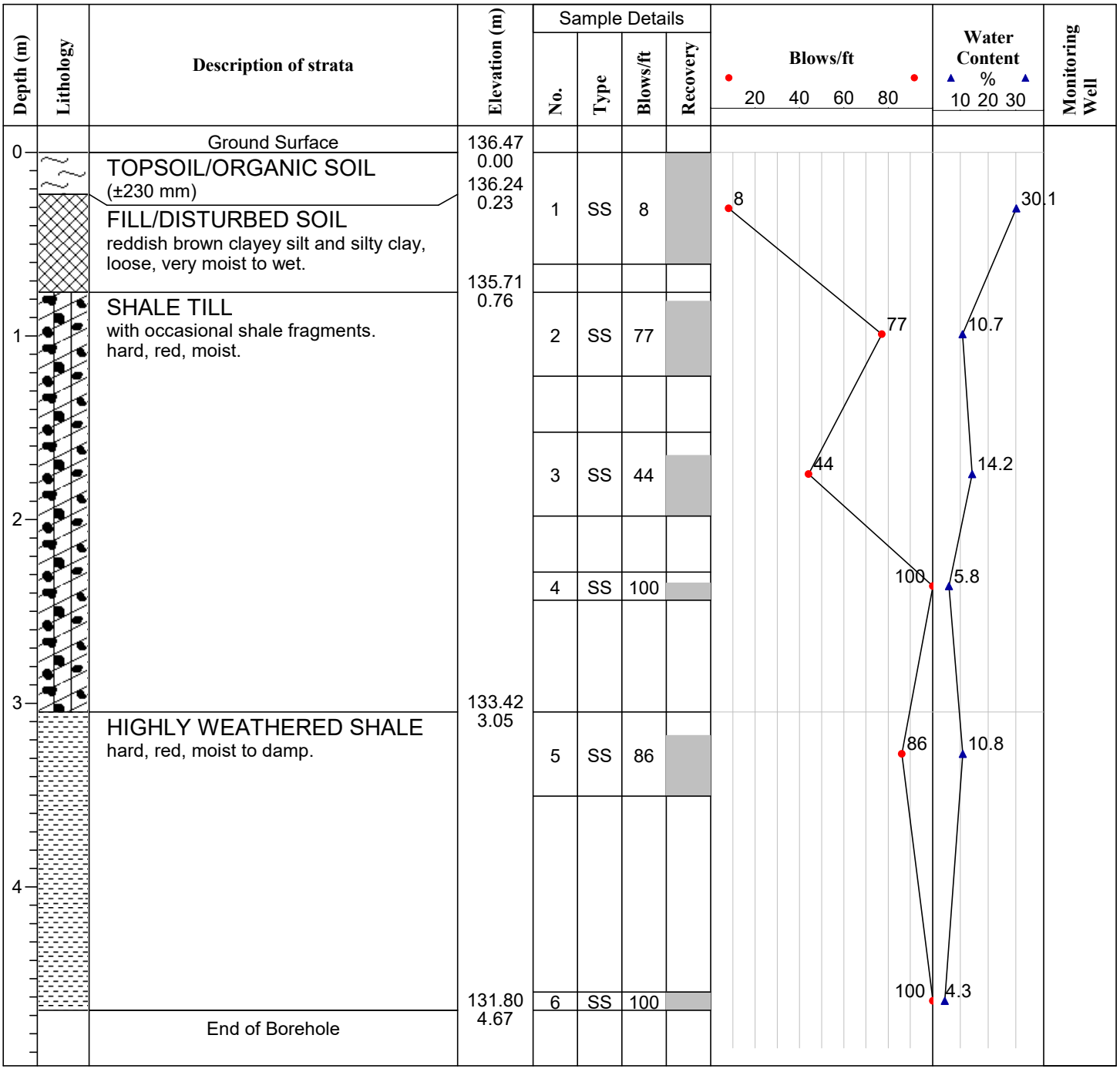
Log of Borehole BH-5

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 6

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO



Remarks: Upon completion of drilling, the borehole was open to 4.3 m below EGSL and dry.

Drill Method: D-50

Drill Date: 27 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1

Project No: 7481

Log of Borehole BH-6

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 7

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO

Depth (m)	Description of strata	Elevation (m)	Sample Details: No.	Type	Blows/ft	Recovery	Blows/ft (20 40 60 80)	Water Content % (10 20 30)	Monitoring Well
0	Ground Surface	137.25							
	FILL/DISTURBED SOIL ±180 mm of crushed granular followed by reddish brown clayey silt with traces of rootlets, very loose, moist.	0.00	1	SS	3		3	12.0	
1	HIGHLY WEATHERED SHALE hard, red, moist.	136.49 0.76	2	SS	100		100	7.9	
		135.65	3		100		100	8.1	
	End of Borehole	1.60							
2									
3									
4									

Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 28 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1

Project No: 7481

Log of Borehole BH-7

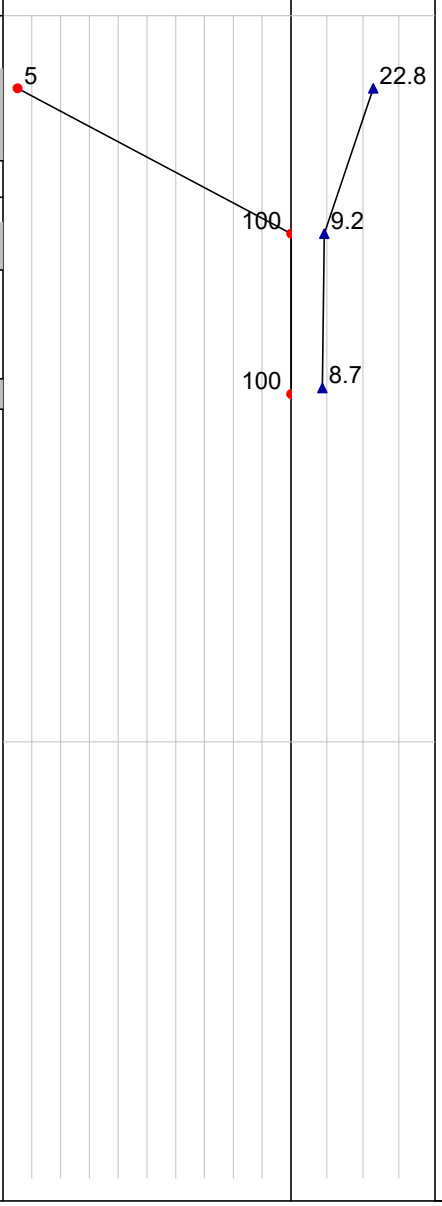
Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 8

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO

Depth (m)	Description of strata	Elevation (m)	Sample Details: No.	Type	Blows/ft	Recovery
	Ground Surface	136.65				
0	TOPSOIL/ORGANIC SOIL (±350 mm)	0.00				
		136.30	1	SS	5	
	FILL/DISTURBED SOIL reddish brown clayey silt with traces of rootlets, loose, very moist.	0.35				
		135.89				
	SHALE TILL hard, red, moist.	0.76	2	SS	100	
1						
		135.13				
	HIGHLY WEATHERED SHALE hard, red, moist.	1.52	3	SS	100	
	End of Borehole					
2						
3						
4						



Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 28 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1

Project No: 7481

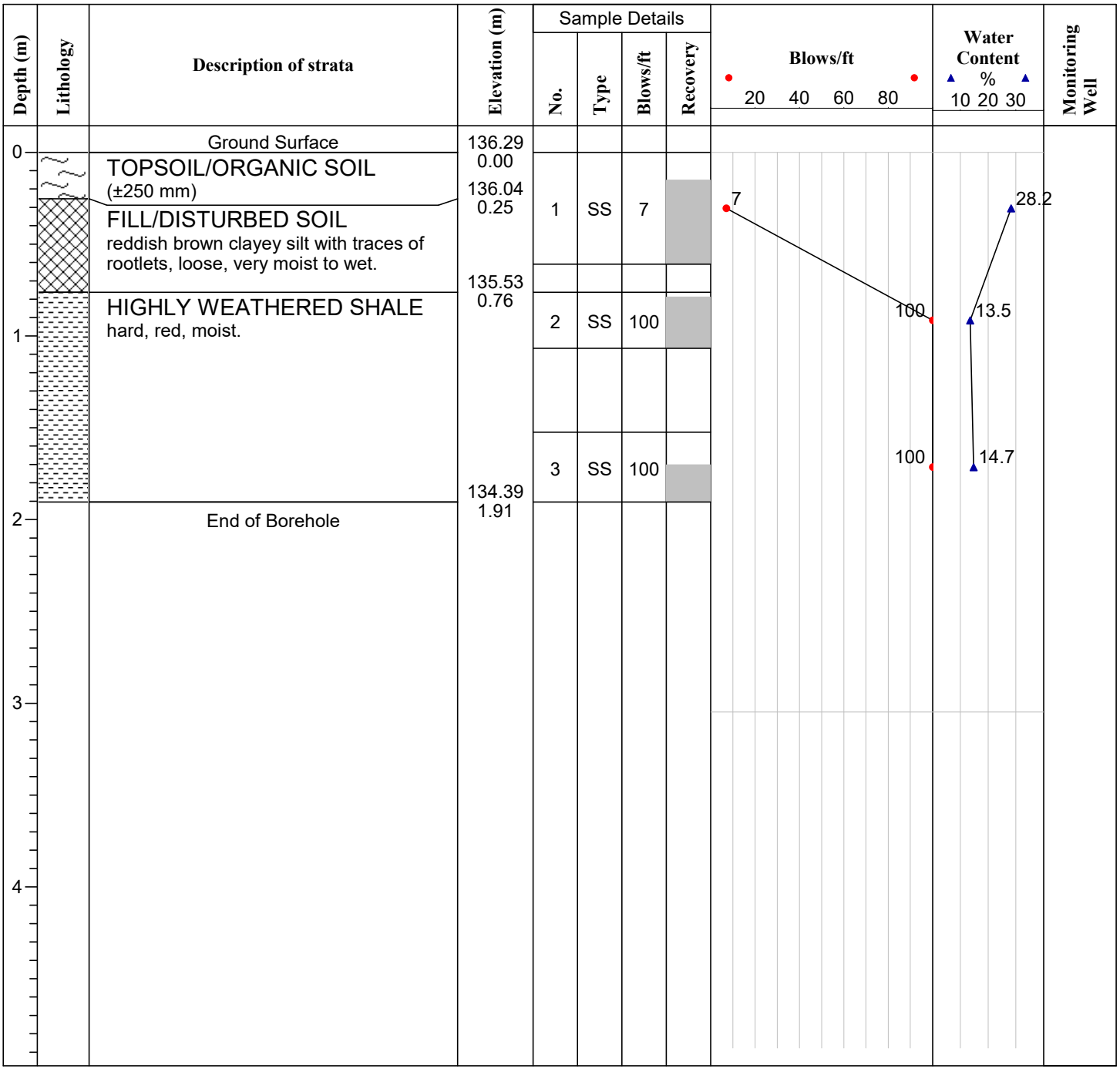
Log of Borehole BH-8

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 9

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO



Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 28 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1

Project No: 7481

Log of Borehole BH-9

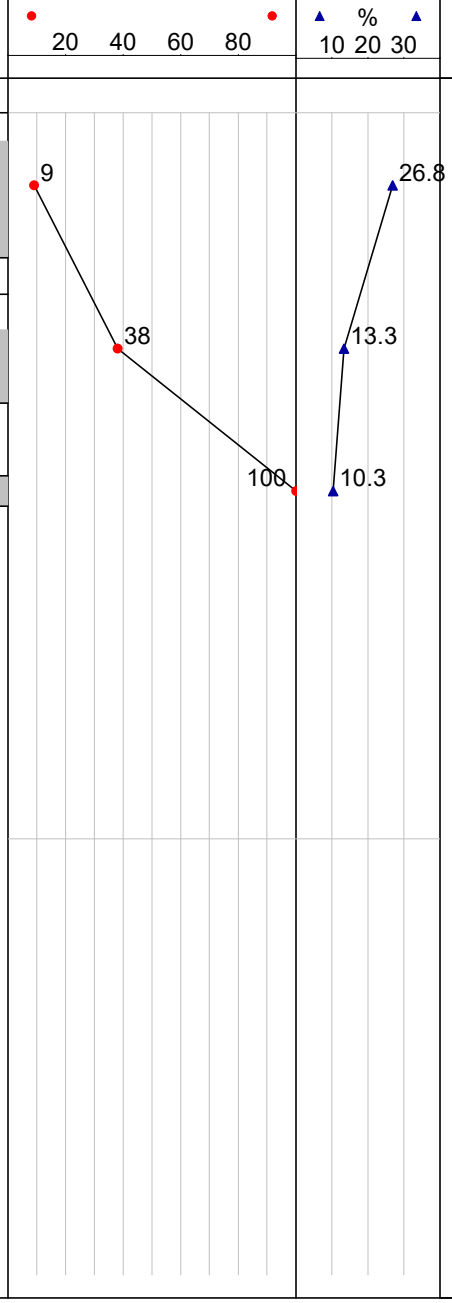
Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 10

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO

Depth (m)	Description of strata	Elevation (m)	Sample No.	Type	Blows/ft	Recovery
	Ground Surface	136.48				
0	FILL/DISTURBED SOIL reddish brown clayey silt with organics in the upper ±230 mm and occasional gravel, loose, very moist.	0.00	1	SS	9	
1	with minor plastic fragments, moist.		2	SS	38	
	HIGHLY WEATHERED SHALE hard, red, moist.	134.96 1.52	3	SS	100	
2	End of Borehole					
3						
4						



Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 27 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

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Project No: 7481

Log of Borehole BH-10

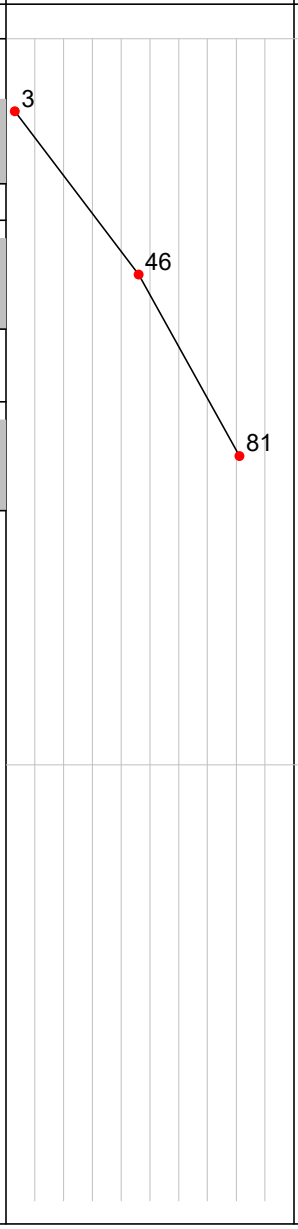
Project: PROPOSED RESIDENTIAL DEVELOPMENT

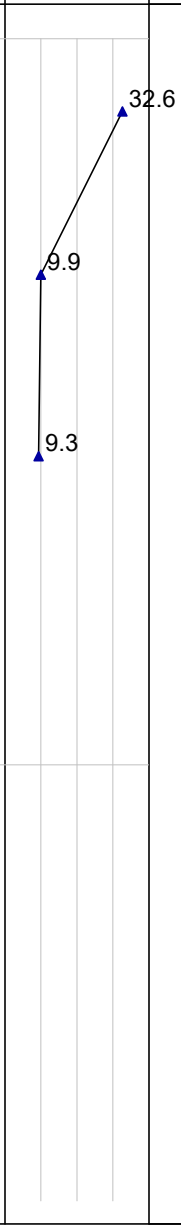
Client: PENALTA GROUP LTD.

Enclosure: 11

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO

Depth (m)	Description of strata	Elevation (m)	Sample No.	Sample Type	Blows/ft	Recovery
	Ground Surface	136.50				
0	TOPSOIL/ORGANIC SOIL (±300 mm)	0.00				
		136.19	1	SS	3	
	FILL/DISTURBED SOIL reddish brown clayey silt, very loose, very moist to wet.	0.30				
		135.74				
1	SHALE TILL hard, red, moist.	0.76	2	SS	46	
		134.97				
	HIGHLY WEATHERED SHALE hard, red, moist.	1.52	3	SS	81	
2		134.52				
	End of Borehole	1.98				
3						
4						





Monitoring Well

Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 27 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

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Project No: 7481

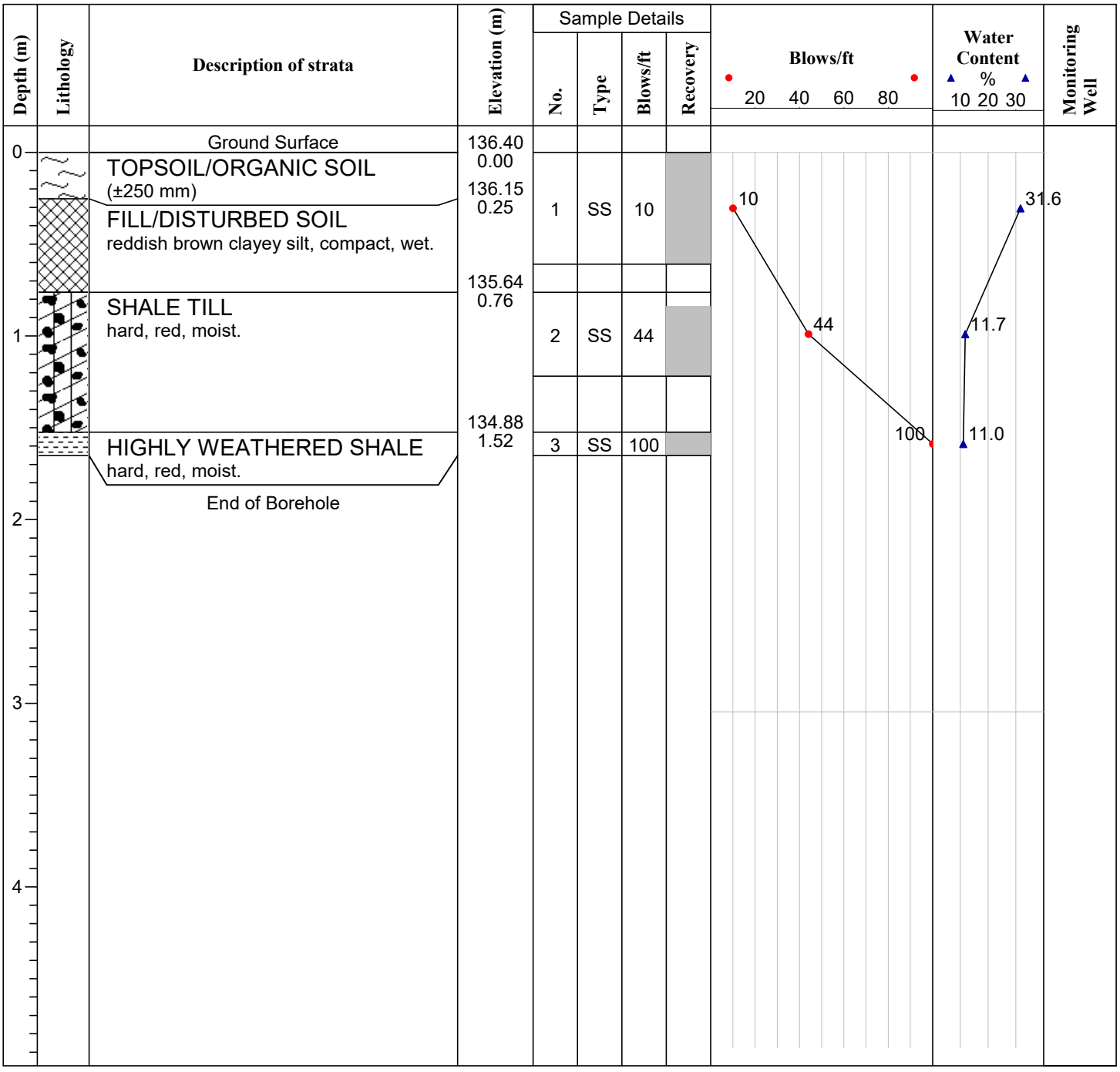
Log of Borehole BH-11

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 12

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO



Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 28 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

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Project No: 7481

Log of Borehole BH-12

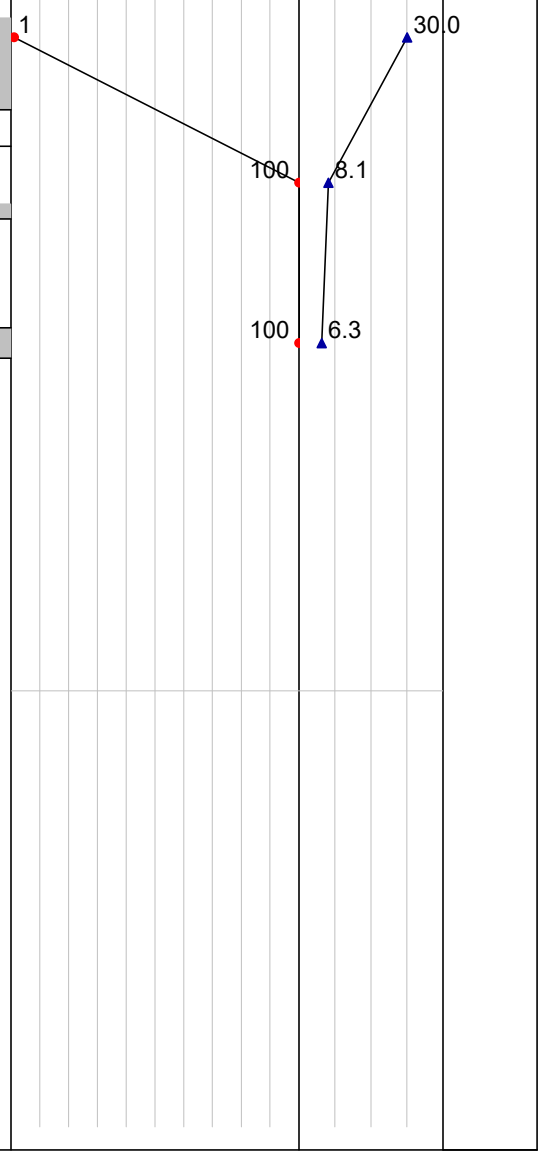
Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: PENALTA GROUP LTD.

Enclosure: 13

Location: 1493 SIXTH LINE, OAKVILLE, ONTARIO

Depth (m)	Description of strata	Elevation (m)	Sample No.	Type	Blows/ft	Recovery
0	Ground Surface	136.19				
	TOPSOIL/ORGANIC SOIL (±150 mm)	0.00	1	SS	1	
	FILL/DISTURBED SOIL reddish brown clayey silt, very loose, wet.	135.43				
1	HIGHLY WEATHERED SHALE hard, red, moist.	0.76	2	SS	100	
		134.54	3	SS	100	
	End of Borehole	1.65				
2						
3						
4						



Monitoring Well

Remarks: Upon completion of drilling, the borehole was open and dry.

Drill Method: D-50

Drill Date: 28 MARCH 2025

Datum: GEODETIC

FORWARD ENGINEERING & ASSOCIATES INC.
244 Brockport Drive, Unit 15, Toronto, Ontario, M9W 6X9

Engineer: P.R.

Checked by: G.S.

Sheet No. 1 of 1